RESPONSE GROUPS AND VARIETIES FOR YEAR-ROUND SNAPDRAGONS*

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A few of us can recall growing snapdragons exclusively by cuttings with all the associated problems of premature buds, rust, mildew and slow, cold crops that were tolerated. That phase is best forgotten.

Can you remember the acclaims given to Cheviot Maid and how satisfying it was to produce crops from seed? With the advent of Christmas Cheer, Mary Ellen, Dorcas Jane, Margaret, Maryland Pink, the still firmly entrenched Lucky Strike, Glorious, and Schumann varieties there soon evolved a simple, early, mid-season and late flowering terminology.

It was well established that from the same sowing and benching date under the same temperature and light environment the sequence of flowering of the previously mentioned varieties would be maintained and normally range from late December through April.

With the introduction of Rockwood's Crystal White, Summer Pink and Yellow, a fourth group was added and labelled summer varieties. Thus early, mid-season, late and summer classifications were common or they were more simply termed winter, spring and summer flowering varieties.

In recent years the release of Citation, War Admiral, Wintergreen, Twenty Grand, Broker's Tip, Christina, Patricia, Libby, Snowman, June Bridge, the Potomac varieties, White Skies, and Gay Time just to mention a few have greatly strengthened and improved the prospects for year-round snapdragons.

The variety situation is so similar to that which has evolved with the chrysanthemum that I beg your indulgence. Had the principles of temperature and day length control necessary to flower the chrysanthemum the year-round been worked out in the early 40's only mild interest would have occurred. There simply were not then available enough good varieties to put year-round flowering on a practical, efficient basis. It was timely then that by the late 40's and early 50's a sufficient range of high and low temperature tolerance had been bred and while there were, and still are, serious gaps, the weekly flowering of standards and sprays became a reality.

As precision growing became the rule, we sharpened our chrysanthemum terms. Instead of early flowering we used 7-, 8-, 9-week response groups. Instead of the term mid-season we advanced to 10-, 11-, 12-week groups. And we changed from late flowering to 13-, 14-, and 15-week terms.

Thus within a crop temperature range of approximately 60 to 80° F we knew that for a given variety, once short photoperiods were applied, it would require precisely the same number of weeks response to achieve maturity. There are exceptions, of course.

We learned that a steady flow of quality chrysanthemums built up a continuous demand and that with the exception of holiday increases, seasonal demand became less a marketing limitation.

This same principle of market education will evole for the snapdragon. When the best of our varieties are more efficiently grown in their proper period, the result will be a steady flow of quality snapdragons every week in the year. To build the market we must first have the product.

I venture to propose a schedule of greater efficiency and precision in a program of year-round snapdragons. Efficiency as used here means good average spikes in the shortest possible crop time.

First I appeal for a sharper classification of varieties. It is known that increasing day length by supplementary light will accelerate response or shorten crop times, the effect is very small. Conversely it is known that shortening day length by use of black cloth shade will delay response for a short period. We do not believe either methods are practical and consider the response of snapdragons to controlled photoperiods too small to make it pay. The vital controlling factors for snapdragon flowering are sunlight and temperature. Only temperature can, within limits, be grower controlled. We propose a 50° minimum night temperature with cloudy day temperatures run 54-56° and bright days going to 62-64°. The essential basis on which snapdragons are grouped is the response of all varieties to a 50° minimum temperature - just as 60° holds for the chrysanthemum.

Just as direct benching of chrysanthemum cuttings cuts cost, spelling higher quality and improved uniformity so, we believe, does direct benching of snap seedlings. High, low, and staggered pinching will delay crops and spread out flowering. Cost-wise and time-wise it pays to reduce this variable. We heartily endorse single stem, single crop procedures for maximum precision. Good growers recognize that uniformity of crops is improved by grading and planting more uniform seedlings.

In the past it was common practice to double crop and to some extent still is today. I believe we will gradually see a reduction of this practice in favor of the uniformity, higher grade counts, and faster clearance of the single crop.

Some years ago Jud Haney urged me to breed snaps more for photoperiodic response than for any other factor. We ignored this plea and concentrated our efforts on durability in terms of more shatterproof varieties with better keeping and shipping qualities. In the development of our inbred parent lines that are used in the crosses that create the new hybrids we emphasized more tolerance to winter 50° minimum temperatures and others that would tolerate extremely high summer temperatures.

Crosses between the most reproductive inbreds of the 50° F group only produce hybrids that flower with best quality at the 50° F level. At 50° F they constitute a fast response group. In this latitude their best period of value extends from December through April. This is the Winter and Early Spring response group. Well known representatives are Citation, Albion, Wintergreen, Whirlaway, War Admiral, and Gallant Fox. Excellent new ones are Ohio, paper white; New York, light pink; Vermont, primrose yellow; and Wisconsin, dark pink. Ohio, New York and Vermont are very shatterproof. Bench to start-cut time is 16 to 20 weeks.

Crosses between the most vegetative inbreds of the 50° group only produce hybrids that flower with best quality at the 50° F level but require more crop time. At 50° F they constitute an intermediate response group. In this latitude their best period of value extends from mid-October through November and again mid-February through mid-May. This is the Late Winter and Spring response group. Best members are Twenty Grand, Snowman, Native Dancer, Christina, Broker's Tip, and Golden Spike. A very promising new rose pink is Indiana. Twenty Grand, Christina, and Indiana are quite shatterproof. Crop time is 22 to 18 weeks in late winter through spring.

Crosses between inbreds of the extremes of 50° F and those that tolerate high summer temperatures result in hybrids that are slow at the 50° F level. At 50° F they constitute a slow response group. For this latitude their most efficient periods are mid-April through June and mid-September through mid-November. This is the Late Spring and Fall response group. Known representatives are June Bride, Potomac White, Pink, and Yellow. We are currently introducing an improved new series in this group. Among the best are Virginia, paper white; Kentucky, apply blossom pink; Nevada, yellow; and Kansas, golden bronze.

Virginia and Kentucky are shatterproof. Crop time is 10 to 14 weeks in the fall; 20 to 12 weeks in the spring.

Crosses between inbreds tolerant only of high temperatures result in hybrids that are blind at the 50° F level. At 50° F they constitute a blind response group. For this latitude their most efficient periods are from mid-June through September. This is the Summer response group. Known representatives are Crystal White, White Skies, Gay Time, Summer Pink, Summer Jewel, and Dark Star. A superb new pink is now available in the variety Florida, and a good new lavender is Arizona.

Crystal White, White Skies, Summer Jewel, and Florida are highly shatterproof. Bench to start cut time is 9 to 13 weeks.

Given uniform seedlings, correct temperature, good culture and the recommended grouping of varieties, we normally replant each bed three weeks after start cut. This is faster in summer. We average three crops per bed per year.

The flowering periods recommended here hold primarily for the 40 to 45 degree North latitude parallels. For each 5 degree decrease in the south it is suggested that starting with the summer group an expansion be made of one month at the start and end of the recommended period. This will gradually reduce the value of the winter and early spring groups in southern climates. Conversely more northern latitudes should expand the winter and early spring, and other groups shrinking or almost eliminating the use of the summer groups.

Precision culture demands closer attention to exacting operations. When these are learned they become routine practice. They are the cause and result of gratifying and profitable year round snapdragon crops.

Below are recommendations for profitable year-round snapdragons.

1. Select the best varieties. Flower them only in their most efficient periods.

   A. Winter and Early Spring group - December through April

White	Yellow	Pink	Bronze
Citation	War Admiral	Wintergreen	Gallant Fox
Albion	Vermont	Whirlaway	
Ohio		New York	
		Wisconsin	

   B. Late Winter and Spring group - mid-October through November and mid-February through mid-May

White	Yellow	Pink	Red
Twenty Grand	Broker's Tip	Christina	Cherokee
Snowman	Golden Spike	Native Dancer	
Spartan White		Indiana	

C. Late Spring and Fall group - mid-September through mid-November and mid-April through June

White	Yellow	Pink	Bronze and Red
June Bride	Potomac Yellow	Kentucky	Kansas
Potomac White	Nevada	Potomac Pink	Tennessee - red
Virginia			

D. Summer group - mid-June through September

White	Yellow	Pink	Lavender
Crystal White	Dark Star	Gay Time	Arizona
White Skies		Summer Jewel	
		Florida	

2. Maintain a 48° to 50° F minimum temperature. Seasonal higher light intensities permit higher minimums.

3. Grade your seedlings and stress uniform plantings.

4. Exploit the lower cost operations of direct planting and single stem culture.

5. Use the more shatterproof, ethylene tolerant varieties for improved shipping and keeping quality.

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